

tooth, the antenna including an antenna choke to restrict transmission of microwave energy to surrounding tissue; and

a waveguide connected to the antenna;

a source of microwave energy operably coupled to the waveguide, including a control system for controlling delivery of microwave energy to the waveguide.

REMARKS

Claims 1-7, 13-14 and 16 are pending. By this Amendment, dependent claims 8-12 are canceled to be pursued in a continuation application. Dependent claim 7 has been canceled and independent claim 1 has been amended to incorporate the limitations of dependent claim 7. No narrowing of the scope of original dependent claim 7 is intended by this amendment.

Foreign Priority

A certified copy of the Canadian Application 2,246,663 is being submitted under separate cover.

Objections to Specification

Dependent claims 8-12 have been canceled to be pursued in a continuing application, therefore the rejections based on these claims are moot.

With respect to dependent claim 13 and independent claim 16, it is respectfully submitted that a person of ordinary skill in the art is well aware of what constitutes an "antenna choke."

Each of these terms is used in their ordinary meaning of “antenna” as a guide for delivering microwave radiation and “choke” as a constriction, suppression or check of that delivery.

Double Patenting

Upon indication of allowable subject matter, the Applicant will submit an appropriate terminal disclaimer.

Section 102 Rejection

Independent claims 1 and 14 stand rejected as being anticipated by Stevens et al. These rejections are respectfully traversed.

It is respectfully submitted that the rejection does not establish an anticipation of either claim as it is admitted at page 5 of the Office Action that Stevens et al. discloses the application of the tool to the interior of a tooth, but not to an exterior surface. Specifically, the tool of Stevens et al. is “arranged to allow radiation of electromagnetic energy into a man-made or natural cavity in the tooth under treatment.” (Abstract) Without some teaching or suggestion of the application of the tool of Stevens et al. to the exterior of a tooth, the rejection is improper. Moreover, without the hindsight afforded by the present invention, it is respectfully submitted that there is nothing that would teach or suggest the use of the tool of Stevens et al. for anything other than its disclosed purpose.

Independent claim 1 has been amended to incorporate the limitation of previous dependent claim 7 to make clear that the purpose of the invention of claim 1 is for heating caries. In this context, Stevens et al. fails to teach or suggest application of microwave energy in this

manner. Similarly, independent claim 14 specifies specific power and frequency ranges of the microwave energy that are not taught or suggested by Stevens et al.

Section 103

Claims 2-5 stand rejected as being unpatentable over Stevens et al. in view of the statement that the power levels and frequencies can be adjusted to different levels. These rejections are respectfully traversed.

It is respectfully submitted that the disinfectant purpose of Stevens et al. and the disclosure make clear that the purpose of Stevens is to heat water or the water component of tissue, much the same way that a conventional microwave heats that water components in food to heat the food. The end result of Stevens et al. is to make the tooth cavity and/or liquid disinfectant hot. The Applicant is willing to submit declarations by persons of ordinary skill in the art to show that the tool of Stevens et al. which is designed to make the tooth cavity and/or liquid disinfectant hot will not achieve the purposes of the claimed inventions. If the Examiner would like to take the Applicant up on this offer of proof, the Examiner is invited to contact the undersigned attorney to discuss the nature of the declarations to be submitted.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Application No. 09/897,317

Respectfully submitted,



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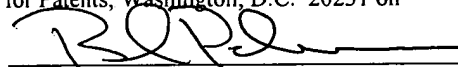
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Brad Pedersen

ATTACHMENT
REDLINED AMENDMENT

In the Claims

Please cancel dependent claims 8-12 without prejudice or disclaimer.

Please cancel dependent claim 7.

Please substitute the following amended claims for those currently pending:

1. (Twice Amended) A microwave dental system comprising:
 - a hand-held dental tool including:
 - an antenna positioned at a distal end of the tool and configured to be selectively positioned within a mouth of a patient adjacent at least one exterior surface of a tooth; and
 - a waveguide connected to the antenna;
 - a source of microwave energy operably coupled to the waveguide, including a control system for controlling delivery of microwave energy to the waveguide such that the dental tool delivers microwave energy to the at least one exterior surface of the tooth and the microwave energy is applied at a frequency and power to preferentially heat caries.
7. (Canceled) The system of claim 1 wherein the microwave energy is applied by the control system at a frequency and power to preferentially heat caries.

8. (Canceled) The system of claim 1 wherein the microwave energy is applied to polymerize a resin matrix to create a dental composite.
9. (Canceled) The system of claim 8 wherein the resin matrix is comprised of polyfunctional methacrylate esters and oligomers including Bis-GMA and microwave sensitive initiators.
10. (Canceled) The system of claim 8 wherein the hand-held tool further includes a mechanism to deliver the resin matrix to the tooth.
11. (Canceled) The system of claim 1 wherein the microwave energy is applied as part of a non-invasive procedure.
12. (Canceled) The system of claim 1 further comprising means for providing cooling to the hand-held tool during the application of microwave energy.